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Serial No.: 10/053,238
Group Art Unit: 2872
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Attorney Name: Roger R. Wise
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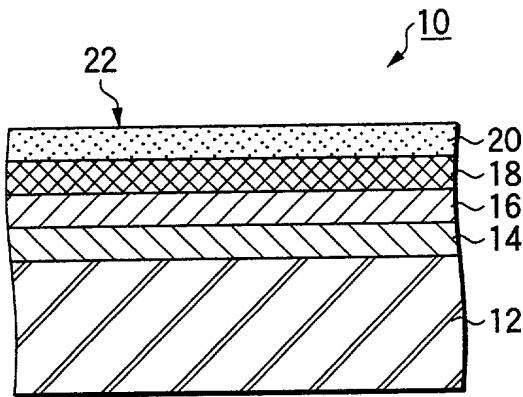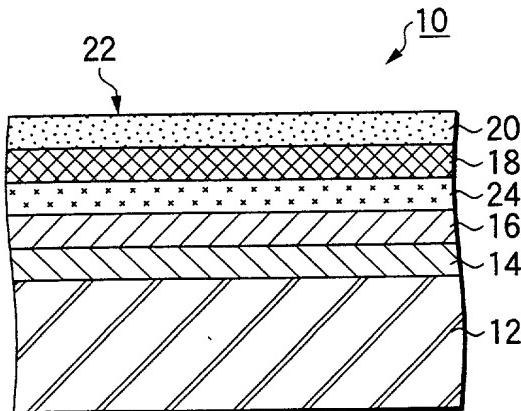1/15

#4

FIG.1

FIG.2

FIG.3

FIG.4

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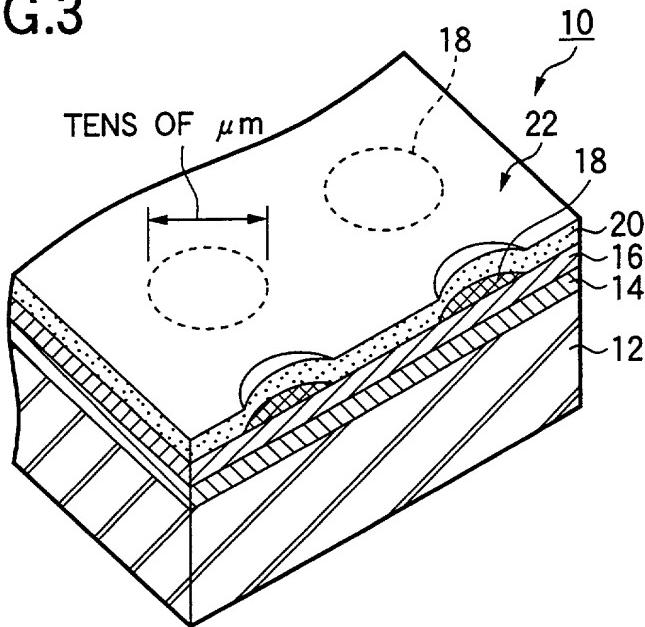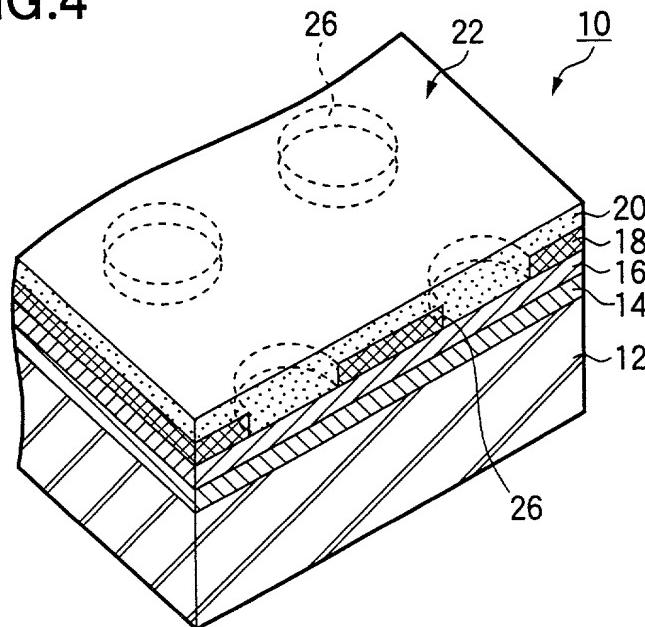Tel.: (213) 488-7100   Docket No.: 51270-277021
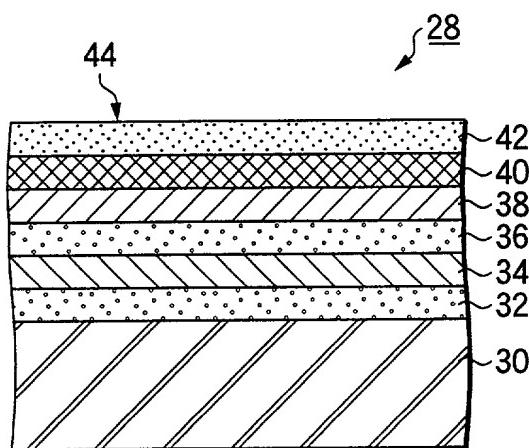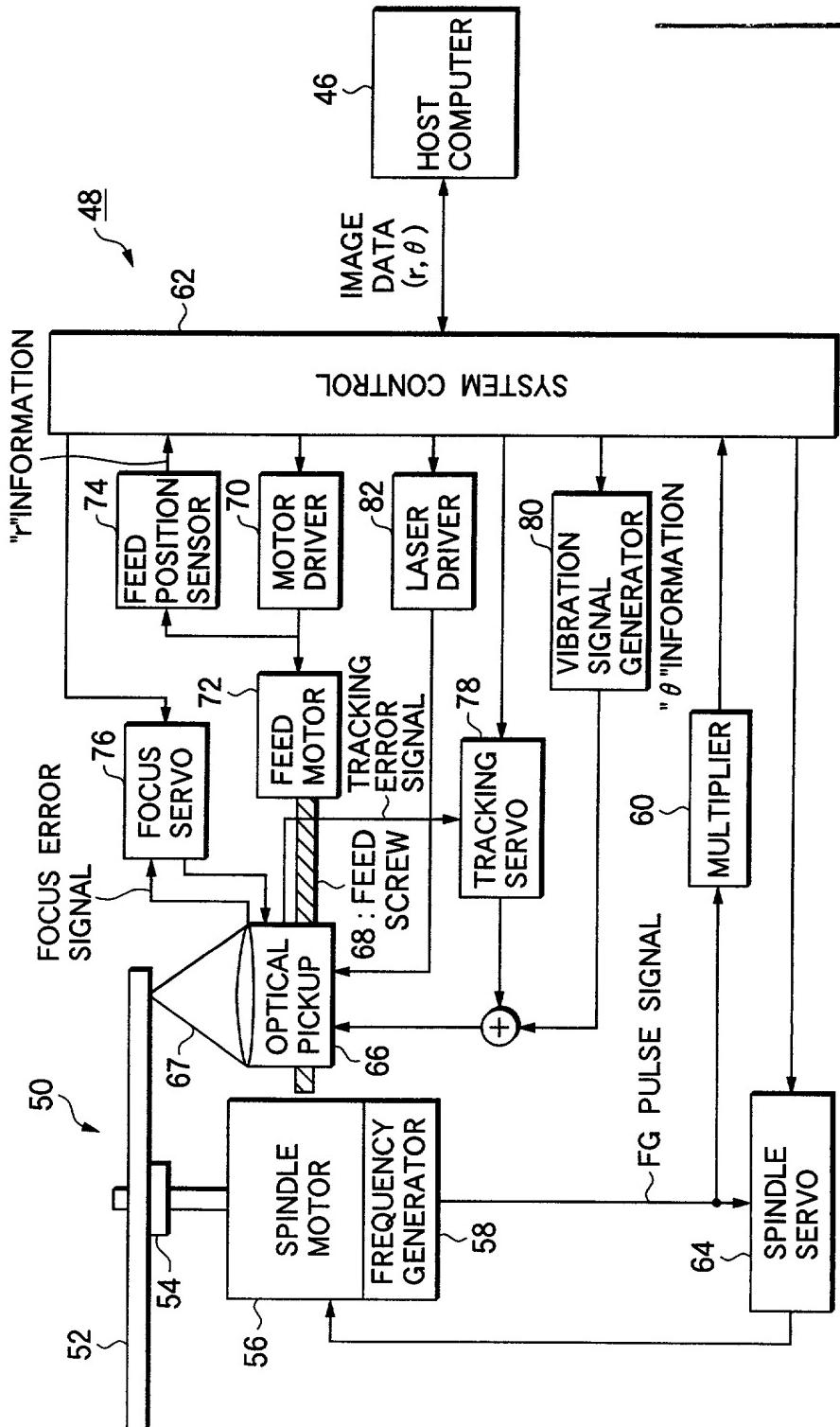Sheet 3 of 5

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FIG.5

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FIG.6

HOST COMPUTER 46

IMAGE DATA (r, θ)

48

SYSTEM CONTROL 62

"r"INFORMATION

FEED POSITION SENSOR 74

MOTOR DRIVER 70

LASER DRIVER 82

VIBRATION SIGNAL GENERATOR 80

"θ"INFORMATION

FOCUS ERROR SIGNAL

FOCUS SERVO 76

FEED MOTOR 72

TRACKING ERROR SIGNAL

TRACKING SERVO 78

MULTIPLIER 60

68 : FEED SCREW

OPTICAL PICKUP 66

67

FG PULSE SIGNAL

SPINDLE MOTOR 56

FREQUENCY GENERATOR 58

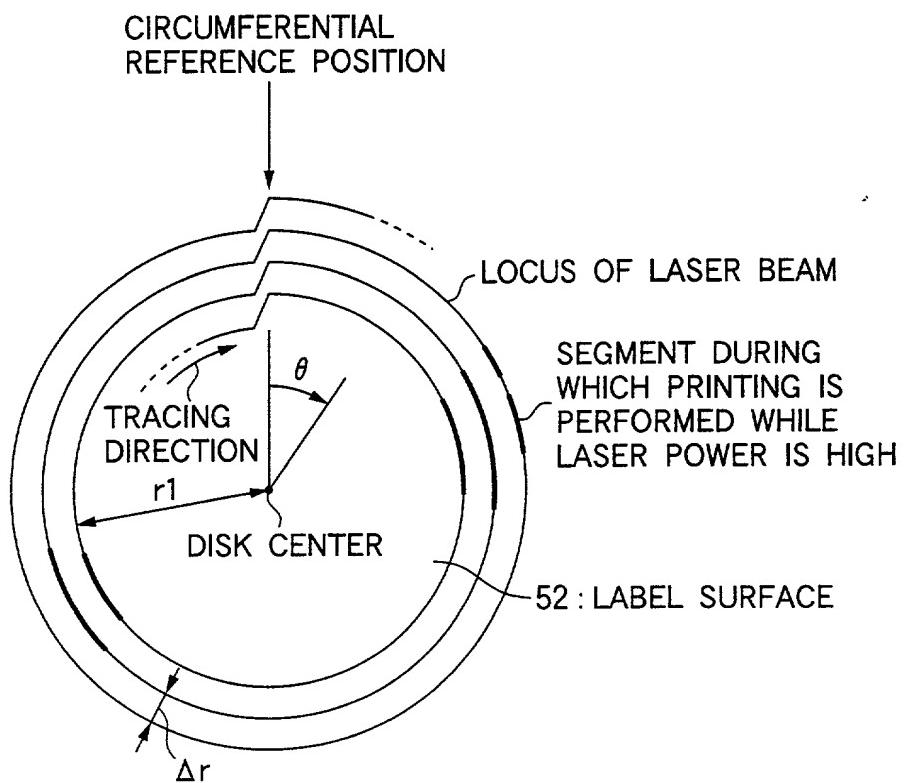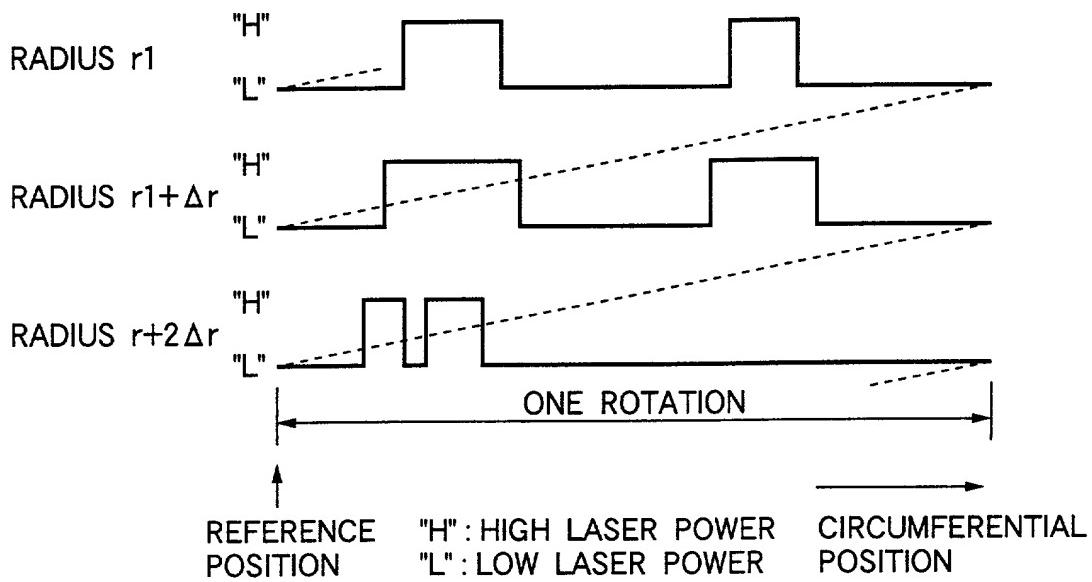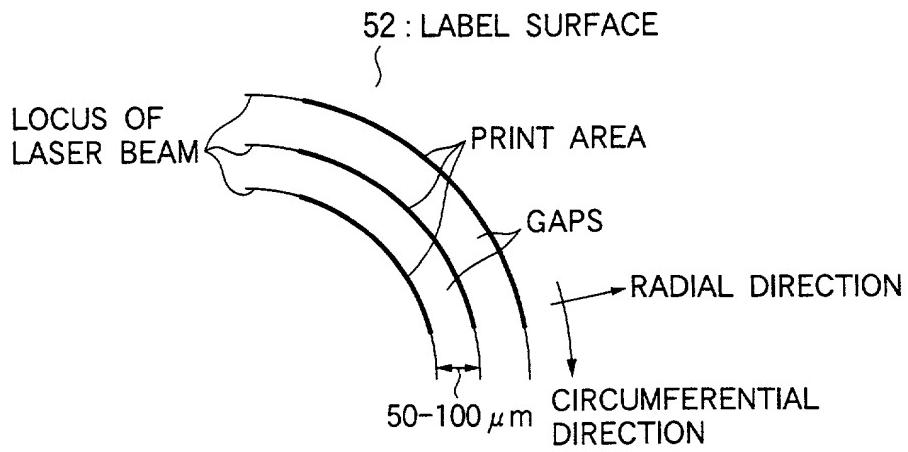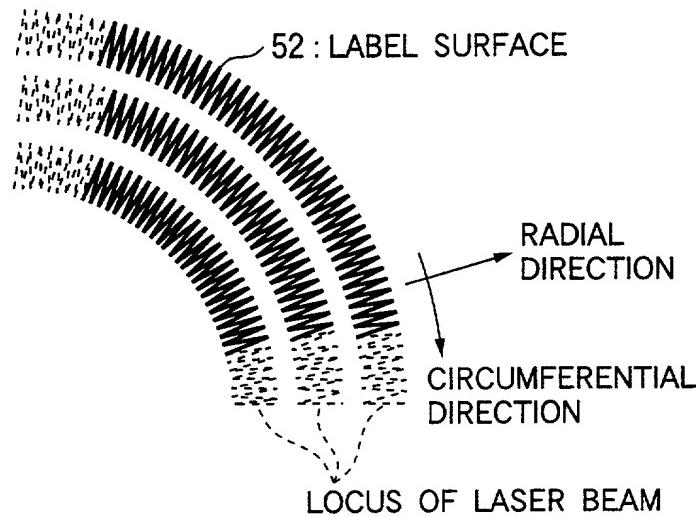SPINDLE SERVO 64

54

52

50

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FIG.7

CIRCUMFERENTIAL
REFERENCE POSITION

LOCUS OF LASER BEAM

SEGMENT DURING
WHICH PRINTING IS
PERFORMED WHILE
LASER POWER IS HIGH

θ

TRACING
DIRECTION

r1

DISK CENTER

52 : LABEL SURFACE

Δr

FIG.8

RADIUS r1

RADIUS r1+Δr

RADIUS r+2Δr

ONE ROTATION

REFERENCE POSITION   "H" : HIGH LASER POWER   CIRCUMFERENTIAL POSITION

"L" : LOW LASER POWER

FIG.9

52 : LABEL SURFACE

LOCUS OF LASER BEAM

PRINT AREA

GAPS

RADIAL DIRECTION

50-100 μm

CIRCUMFERENTIAL DIRECTION

FIG.10

52 : LABEL SURFACE

RADIAL
DIRECTION

CIRCUMFERENTIAL
DIRECTION

LOCUS OF LASER BEAM

MM : PRINT AREA

MM : NON-PRINT AREA

FIG.11B

Δr

LOCUS OF
LASER BEAM
OF HIGH OUTPUT

r_1

θ_2

θ_1

O

FIG.11A

50

52

O

ABCDEFGHI
ABCDEFGHI
ABCDEFGHI
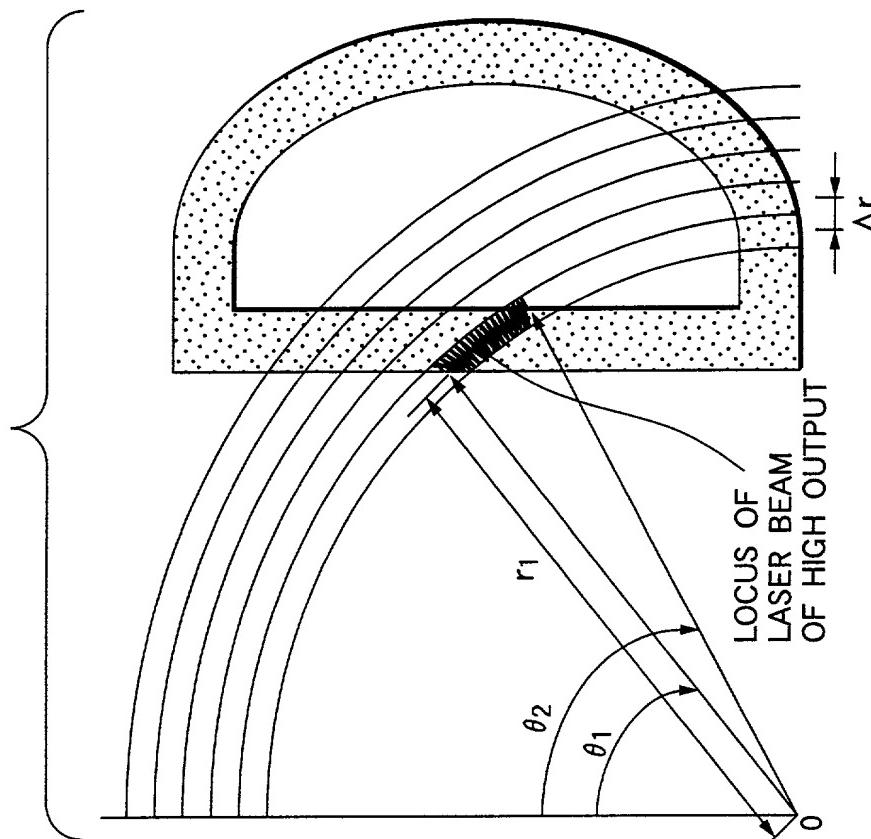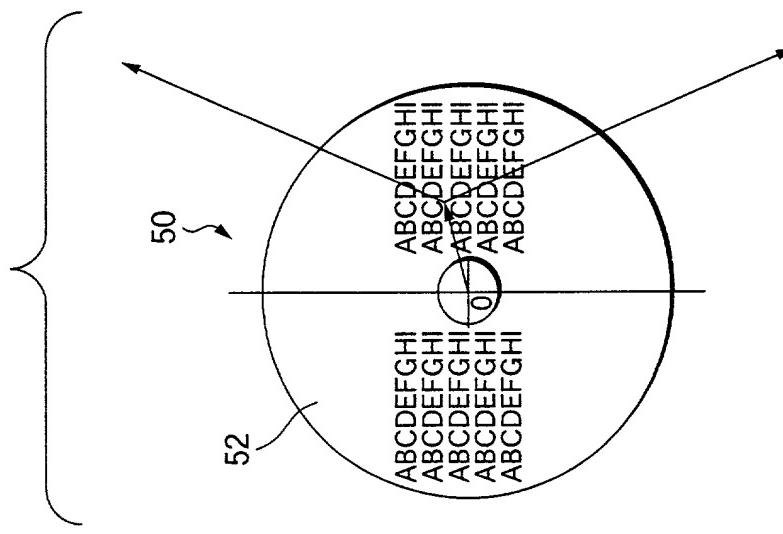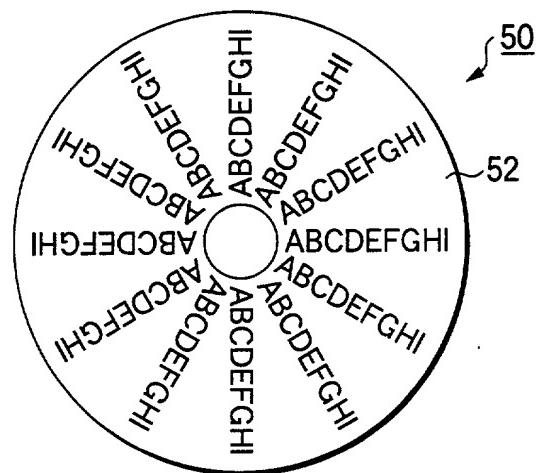ABCDEFGHI
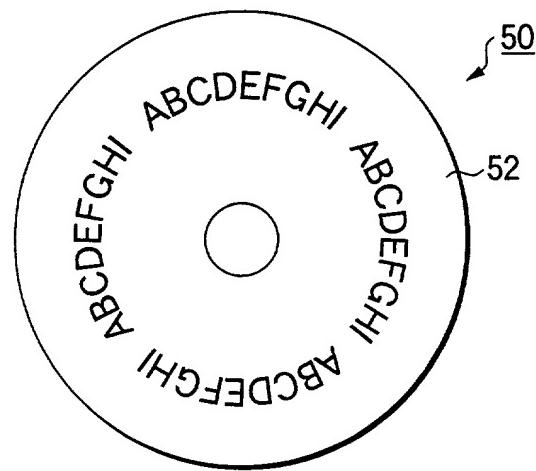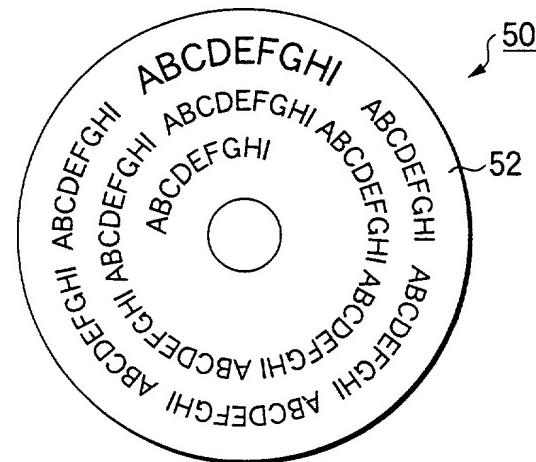ABCDEFGHI

ABCDEFGHI
ABCDEFGHI
ABCDEFGHI
ABCDEFGHI
ABCDEFGHI

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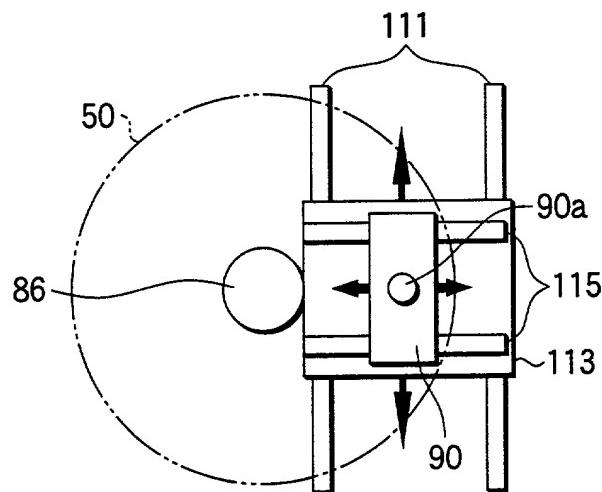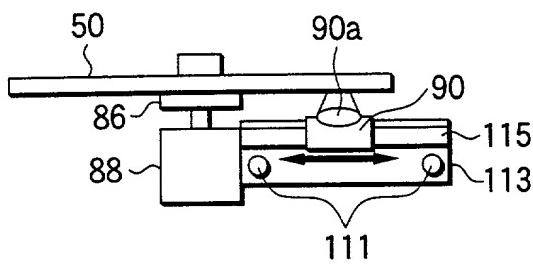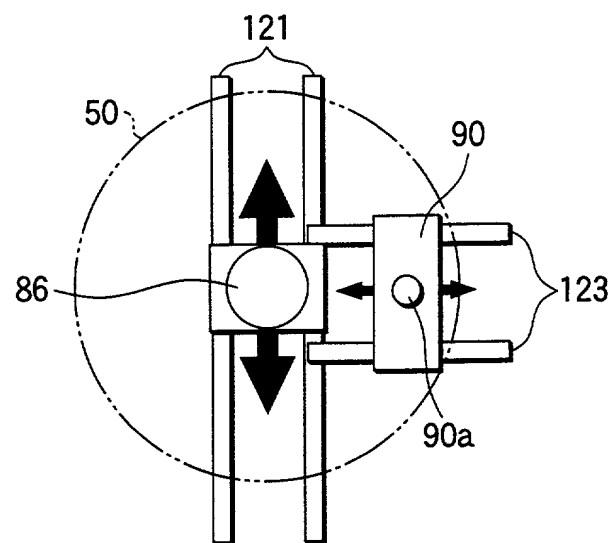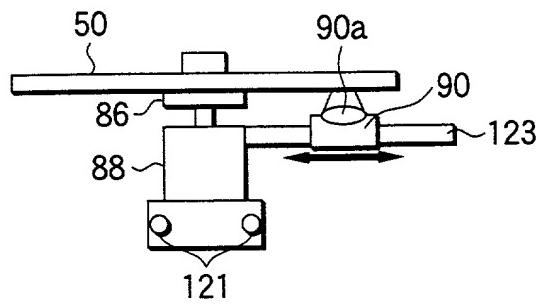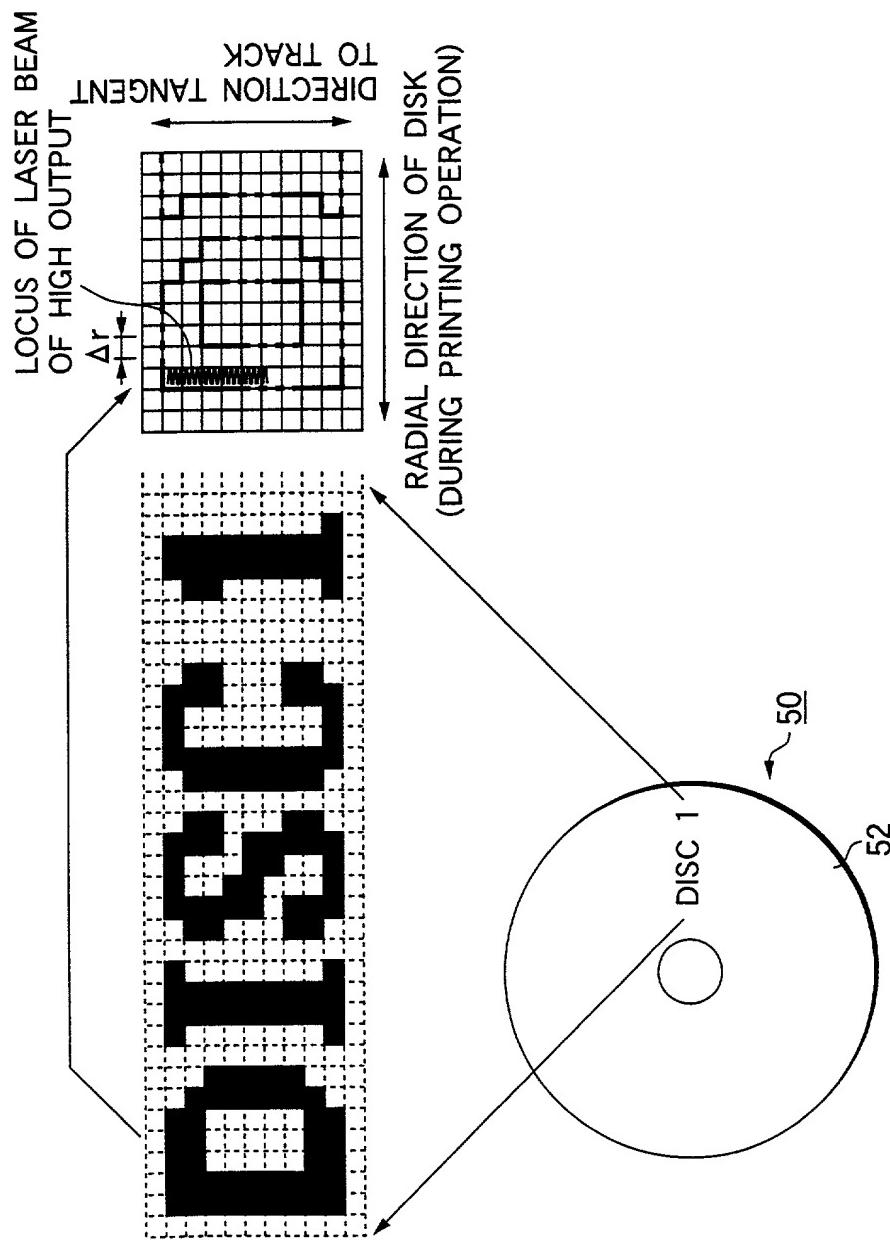Tel.: (213) 488-7100   Docket No.: 51270-277021
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FIG.12A

FIG.12B

FIG.12C

FIG.13

FIG.14A

FIG.14B

FIG.15A

FIG.15B

FIG.16

FIG.17

LABEL SURFACE

~42
~40
~39
~35
~37
~38
~36
~34
~32
~30

SIGNAL-RECORDING LASER BEAM
ENTRANCE SURFACE

FIG.18

LABEL SURFACE

~42
~40
~39
~35
~33
~31
~38
~36
~34
~32
~30

SIGNAL-RECORDING LASER BEAM
ENTRANCE SURFACE

FIG.19

LABEL SURFACE

```
┌────────────────────────────┐
│                            │ ~20
├────────────────────────────┤
│                            │ ~18
├────────────────────────────┤
│                            │ ~24
├────────────────────────────┤
│                            │ ~16
├────────────────────────────┤
│                            │ ~14
├────────────────────────────┤
│                            │
│                            │ ~12
│                            │
└────────────────────────────┘
                ↑
```

SIGNAL-RECORDING LASER BEAM
ENTRANCE SURFACE